



Case report

Planned complex suicide: Self-strangulation and fall from height

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ABSTRACT

We hereby present a case of planned complex suicide. In this case study, we report a teen-aged girl who committed suicide by strangulating herself, and subsequently fell from the 13th floor of a housing apartment. The planned complex suicide was substantiated by the presence of a suicide note and a photograph captured in a mobile handset. To the best of our knowledge, it is the first case involving self-strangulation and fall from height, in which the photograph was stored in the handset. This is to further emphasize that objects like mobile handsets can be important in determining the cause and manner of death. The available evidence at the site of incident should be explored meticulously in order to arrive at a proper conclusion.

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1. Introduction

Suicide is very common among the adolescents and young. From 1989 to 1998, the autopsy records of the Bonn Institute of Forensic Medicine and database of the Bonn police authorities revealed that of the 37 suicide cases, 23 were males (62%) and 14 were females (38%). Their ages ranged between 10 and 21 years with the prevalence sharply increasing in adolescents and young adults.¹ Suicide is the third leading cause of death amongst adolescents aged 15–19 years in the United States and second amongst adolescents in Oregon. During the interval between 1959 to 1961 and 1990 to 1992, the rate of suicide in Oregon increased six-fold among 15–19 years olds. From 1988 to 1991, the suicide rate for adolescents in Oregon (15.5 deaths per 100,000) was 39.6% higher the US rate (11.1).²

In one study, it was reported that of every 100,000 inhabitants in Germany, 16 to 19 people commit suicide annually; and about 80–90% of all suicide acts are due to intoxicated drug abuse.³ Other causes of suicide include self-incineration with fall from height, drug intoxication, hanging, self-strangulation and plaster ingestion, electric shock and gunshot wound and burns.^{4–9} The existing literature related to suicide in Malaysia depict that the commonest

method of suicide is hanging.¹⁰ Other methods include fall from height and poisoning. Among the ethnic groups, Chinese record the highest rate of suicide compared to the local Malay and Indians.

Suicide notes are one of the markers of the severity of a suicide attempt and are said to provide insight into the thinking of suicide victims before the fatal act.^{11,12} However, suicide notes are left in only a minority of suicides.¹³ Previous studies reported considerable variation in the proportion of suicides where a note was left. This accounts to 15–43% for all age groups.^{14,15} Results showed that majority of victims with suicide notes are females, living alone and commit suicide by inhaling carbon monoxide, hanging or sharp instruments. However, those with psychiatric illness do not leave a note behind.¹¹ Suicide note writers had the following characteristics: - predominance of women, predominance of elderly subjects, suicide by medication and poisoning, less mentally disturbed subjects¹⁶ suicide by firearms¹⁷ and predominance of young people.¹⁸ Ho et al. (1998) examined the suicide notes (154 cases, 20%) which indicated that note writers were characterized as young females of non-widowed marital status, with no history of previous suicide attempts, no previous psychiatric illness, and with religious beliefs.¹⁹

Interestingly, note writers used different methods for suicide to non-note writers. Results have shown that note writers had tendency to choose carbon monoxide, hanging or sharp instruments as their suicidal methods. In Japan, hanging is the most

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common means of suicide, accounting to about 40% of suicide victims. Therefore, it is possible that suicide notes may be considered as markers of severity, i.e. actual lethality²⁰ of the suicide attempt.²¹

Complex suicide is described as a suicide in which multiple suicidal methods are utilized. Primary or planned complex suicide is defined as the combination of more than one previously planned methods to prevent first method's failure. In secondary or unplanned complex suicide, the victim employs the second method following the failure of the first one.^{4,8}

Using multiple methods for self-destruction in a single episode are rarely encountered. The victim intentionally uses a variety of methods either simultaneously or chronologically to ensure death. We, hereby report a case of planned complex suicide that took place in an urban city. The findings of this interesting case highlight the importance of a mobile handset, which can be substantial proof.

2. Case report

A recently deceased 15-year-old girl was brought by the police to our mortuary of the Forensic unit, Medical Faculty, Universiti Kebangsaan Malaysia Medical Centre. As per police history, a case of fall from height of 13th floor of a housing apartment was reported. According to the police investigation, the girl had a previous history of suicidal attempt just before her death. External examination of the deceased showed a 2.0–2.5 cm narrow, circular abrasion on anterior neck circumferentially (Fig. 1a). The face was pale. However, there were contusions of the frenulum (Fig. 1b) and submucosa of the left lower lip (Fig. 1c). There were contusions on the underside of the left chin (Fig. 1d). Further, the left hand showed multiple small abrasions on the palmar aspect.

Internal examination showed massive subarachnoid haemorrhages on both cerebral hemispheres and the entire cerebellum

(Fig. 2a). Internal examination of the neck showed some haematoma of the hyoid gland and haemorrhage in the thyro-hyoid muscle bilaterally (Fig. 2b). Fracture of the 2nd and 4th cervical and 1st lumbar vertebrae were present with haemorrhages of the paraspinal muscles (Fig. 2c). Also, fracture of the sternum at the level of right 3rd and 5th ribs was noted with haemorrhages in the anterior mediastinum. Haemothorax was present in the right pleural cavity, and the right lung was collapsed. Both lungs showed interlobar contusions. Fracture of the left humerus was noted. Further, the posterior sacrum was fractured, and the left sacro-iliac joint showed diasthesis. Fracture of the left tibia and right calcaneum were also present.

Examination of the death scene led us to two housing apartments, one on the 2nd floor and another on the 13th floor. The former house did not show any ligature material however, there was a note left behind, which expressed her feelings of depression due to her failures in the secondary school examination recently. Immediately before the presenting incident, she had attempted suicide by strangulating herself with a ligature, but it was unsuccessful as she felt choked and had difficulty in breathing.

The latter house, which was on the 13th floor, showed a slipper and the other pair was found on the ground floor of the apartment. There was no blood spatter or any signs of struggle on this floor. Further enquiry led us to the discovery of her mobile handset, which showed a photograph of her neck injuries, and the explanation for them (Fig. 2d). These findings had supported our findings at autopsy.

Subsequently, she was rushed to the hospital for further management. Enquiry from the hospital revealed that the linear and circular abrasion around her nose and mouth were due to the application of oxygen mask during the admission, and haemorrhage of the frenulum was caused by the application of intubation tube into the trachea.



Fig. 1. a. Photograph showing injuries in the neck. b. Photograph showing contusion of the frenulum. c. Photograph showing contusion of the lower lip. d. Photograph showing contusion of the underside of chin.

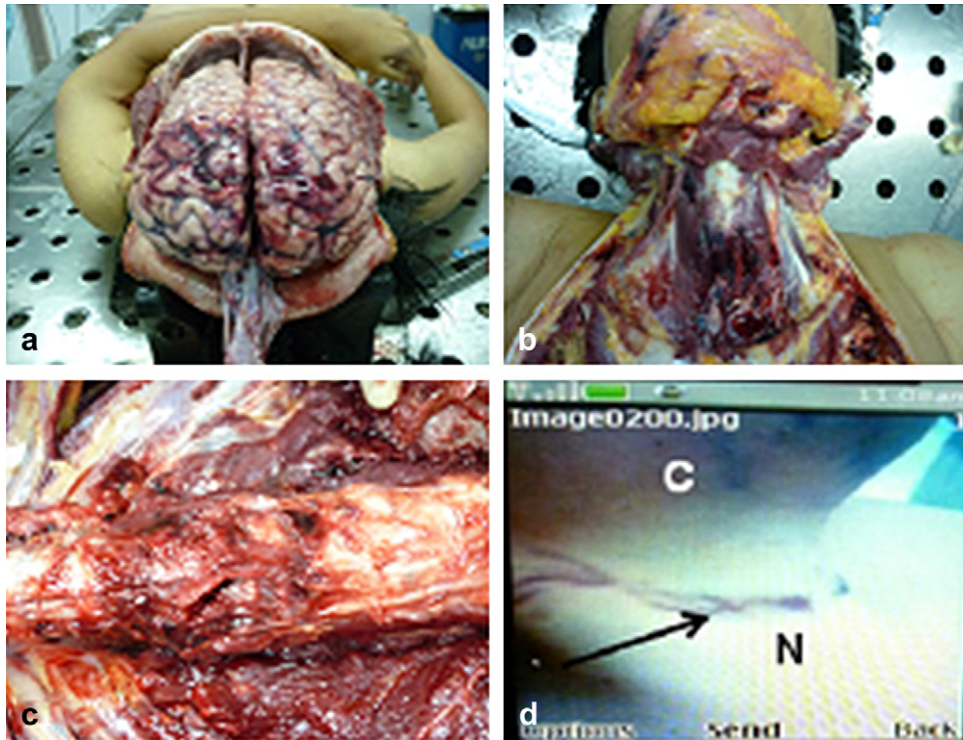


Fig. 2. a. Photograph showing subarachnoid haemorrhages of the cerebrum. b. Photograph showing haematoma of the hyoid gland and thyro-hyoid muscles bilaterally. c. Photograph showing fracture of lumbar 1st vertebra and haemorrhage of paraspinal muscle. d. Photograph showing a mobile handset with a photograph of the neck (N) injuries. The neck injury is marked with arrow. The chin is also seen in the photograph (C).

3. Discussion

Falls from height are predominant in urban set up. Nevertheless, a study in Ireland showed that it can also be a rural phenomenon, in which deaths due to hanging were statistically significant in the male, single, rural dwelling and agriculturally employed.²² Falls from buildings are the commonest in Australia, with falls from ladders predominantly high in falls occurring at home.²³ The distribution of injuries for accidental deaths at home were contributed by home repairs, gardening, gutter cleaning and painting, and the group affected were mainly in the mean age of 53.9 years.²⁴ Interestingly, females were found to record a higher suicidal rate than the males.²⁵

Disagreement predominates regarding the height at which death results. According to a study, death usually occurs when the distance is more than five storeys, and suicidal jumps occurred significantly from higher places than accidental fall.²⁶ In this case, the fall occurred from a high place and the risk of dying was inevitable. Further, it gives an indication that an individual committing suicide usually jumps from a higher place.

Mathematical models construction relating the height of fall to the injuries sustained was done in a study in Singapore.²⁷ Results showed that both height of fall and age were significant independent determinants of the injury severity score and the extent of the injury, corresponding to an injury score more than or equal to 3 (representing serious to lethal injury). The injuries may include laceration or rupture or avulsion of the liver, spleen and kidneys, perforation or transection of gastrointestinal tract, fractures of pelvic girdle. According to a study, the frequency of thoracic injuries is significantly related to the height of fall ($p < 0.05$).²⁸ The injury increases constantly in falls from heights beyond 3 m. For instance, victims of falls sustaining spinal injury increased in frequency in falls from height of more than 10 feet.²⁹ In the present case, the

internal organs showed a collapsed right lung due to right haemothorax as a result of sternal fracture.

Injury to the limb such as wrist was documented to be the most common fracture site. It was documented that the annual rate of wrist fractures is 213 fractures per 100,000 individuals.³⁰ This is due to the flexibility of the limbs especially at the joints, and the strategy in arresting a fall can change the forces applied to the distal forearm during an impact.³¹ In this case, the presence of multiple abrasive-contusions on the extremities and palmar aspect of the left hand showed that the marks over the upper limbs could be due to either primary or secondary impact as a result of the fall.³²

The majority of cases involving primary feet impact showed bilateral fracture of the lower limb bones. The force of feet impact may be transmitted upwards to the base of skull through the pelvis and spine.³² The impact on the foot had caused fracture of the left pelvis and left tibia in this case. Also, the transmitted force from the foot had caused fracture of the second and fourth cervical and the first lumbar vertebrae.

The assessment of a fall or a jump from a height, with regards to manner of death, is based on an analysis of the injury pattern and the scene investigation. According to a study, a horizontal distance and height information can be used to determine the initial launch speed. A study described that an initial launch speed exceeding 2.7 m/s indicates suicide.³³ The maximal initial velocity of the running jump and the standing jump in athletes were measured in relation to the horizontal distance of falling. Nevertheless, some internal factors such as suicidal thoughts or fear might be needed to assess the circumstances of a fall.³⁴ Likewise, influences of a sudden reflex might also influence the circumstances of death.³⁵ Admittedly, in the present case, although the scene was visited, the horizontal distance and height information were not taken due to inadequate facilities and, thus launch speed were not calculated. Nevertheless, mathematical data alone are not sufficient to provide

conclusions about the circumstances of a fall. Instead, an accurate assessment of a case should include careful observations from the death scene along with the autopsy findings.³⁶

Regarding a planned suicide, one method of suicide was sufficient to cause death, so that no combination of method can actually take place.⁹ Primarily, self-strangulation in the context of autoerotic activity has been reported as an accidental event. Further, self-strangulation in the context of a planned suicide is rare.³⁶ In the present case, it was assumed that the girl had resorted to fall from height after failing the first attempt by self-strangulation. The planned suicide by self-strangulation and fall from height presented here is unusual in its combination of these two methods, in addition to suicide note found in the mobile phone. An extant literature search revealed no prior description of such a combination.

4. Conclusion

It is believed that this is the first case of planned complex suicide involving self-strangulation and fall from height with suicide note and a photograph of the neck injuries displayed in a mobile phone. This case is illustrative of the wide range of methods employed by those who commit or attempt suicide. Considering the suicide, particularly when combined with unusual methods, commonly triggers a complete forensic evaluation. It is important for the forensic pathologist to keep the range of methods in mind. This knowledge may assist the pathologist by preventing unnecessary criminal investigation and conclude on the final manner and cause of death. The manner of death in this case was suicidal death, based on the suicidal notes.

Ethical approval

None.

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Conflict of interest

None.

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